# DRAFT
# General Mission Analysis Tool (GMAT)
# Mission and Vision Statement


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# 1 Mission Statement

Put simply, the goal of the GMAT project is to develop new space trajectory optimization and mission design technology by working inclusively with ordinary people, universities, businesses, and other government organizations, and to share that technology in an open and unhindered way. GMAT is a free and open source software system: free for anyone to use in development of new mission concepts or to improve current missions, freely available in source code form for enhancement or further technology development.

A formal statement of the GMAT mission is:

> To research, develop, verify, and transfer new technologies in space trajectory optimization and mission design.
>
> To maximize technology transfer by using an *inclusive, collaborative, and transparent* technology development model where ordinary people, businesses, academia, and other government organizations participate in, and have open and equal access to, NASA technology development.
>
> To foster a vibrant community of users and contributors. Users apply technology to enable new missions, enhance current missions, and provide feedback to contributors for technology enhancement and creation. Contributors enhance current technology and develop new technology.

GMAT has its roots in the goals of NASA, and cannot be truly understood without a clear statement of NASA's goals. The NASA mission and charter contain broad and lofty objectives for the Agency and its employees. Like any good vision statement, the objectives form the basis from which numerous activities and projects at NASA, including GMAT, derive guidance and justification.

One of NASA's Mission Statements is:

> To research, develop, verify, and transfer advanced aeronautics and space technologies.

NASA's Charter contained in the Space Act of 1958 states that:

> NASA shall provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.

The NASA Mission Statement, Strategic Plan, and Charter provide fundamental guidance and justification for the GMAT project, and are ultimately the source of the GMAT Mission and Vision.

# 2 Vision

## 2.1 Technology

The development areas within the mission design discipline that GMAT addresses include, but are not limited to:

- New technology that does not currently exist.
- New applications of existing technology.
- Significant enhancements to existing technology that
  - Give new insights into well known problems.
  - Improve analyst productivity and/or software ease of use.

## 2.2 Community and Collaboration

- Collaborators include users, developers, documenters, graphic designers, web development ... in short, any of the numerous disciplines required in the GMAT technology development process.
- Collaborators come from private sector, academia, government agencies, and the population at large.
- GMAT promotes transparency at all levels: Design, documentation, numerical models, implementation, test procedures, issues and bugs are open to community inspection.
- GMAT employs a service model as opposed to a product model. Government collaborates with industry, and industry provides a service instead of a product. The product is tax payer funded and therefore freely available to all including executable and source code.

# 3 Motivation

- To reduce the cost of mission design technology development by amortizing cost over a large portion of the space community.
- To provide a system in which NASA can develop, test,verify, and transfer new technologies.
- To provide a system in which mathematical models, architecture, and design are open for inspection by all users to best ensure system is applied properly.